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10/507,520	04/06/2005	Hitoshi Onizawa	056205.55398US	1159

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Crowell & Moring  
Intellectual Property Group  
1001 Pennsylvania Avenue NW  
Washington, DC 20004-2595

EXAMINER
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SHECHTMAN, SEAN P

ART UNIT	PAPER NUMBER
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2125

MAIL DATE	DELIVERY MODE
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06/15/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/507,520

Applicant(s)

ONIZAWA ET AL.

Examiner

Sean P. Shechtman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 is/are allowed.
- 6) ☒ Claim(s) 1-9 and 11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 9/14/04; 4/6/05; 3/8/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

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### **DETAILED ACTION**

1. Claims 1-11 are presented for examination.

#### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "the penalty calculation" in line 4. There is insufficient antecedent basis for this limitation in the claim. For purposes of examination, it will be assumed that the penalty calculation is the penalty determination.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 6-8, 11 are rejected under 35 U.S.C. 102(b) as being anticipated by DE 19902056 to DAFERNER (hereinafter referred to as DAFERNER), supplied by applicant.

Referring to claims 1, DAFERNER teaches a building sequence planning system for an automobile production line, said system comprising an input unit for inputting information of vehicles to be manufactured, a processing unit for deciding an optimum building sequence based on the vehicle information inputted through said input unit, and an output unit for externally outputting a building sequence schedule decided by said processing unit, wherein said processing unit prepares a vehicle building sequence, determines a degree of dissatisfaction of the prepared building sequence, as a penalty value, in accordance with restriction conditions which are inputted through said input unit and are imposed when building the vehicles into work, and decides a building sequence with a minimum penalty by preparing a plurality of building sequences and determining the penalty value for each building sequence with respect to the restriction conditions. Referring to claims 2, 11, DAFERNER teaches a building sequence planning system for an automobile production line according to claim 1, wherein the restriction conditions include leveling in distribution of vehicles having the same specifications, a minimum building interval of vehicles having particular specifications, and a maximum succeeding vehicle number and a minimum succeeding vehicle number in successive building of the vehicles when the number of vehicles successively loaded is taken into consideration. Referring to claim 6, DAFERNER teaches a building sequence planning system for an automobile production line according to claim 1, wherein said processing unit is capable of varying a weight used in the penalty determination for each of specifications and options. Referring to claim 7, DAFERNER teaches a building sequence planning system for an automobile production line according to claim 1, wherein said processing unit decides the building sequence with the minimum penalty by using an optimization method represented by a mutually coupled neural network or a genetic

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algorithm. Referring to claim 8, DAFERNER teaches a building sequence planning system for an automobile production line according to claim 1, wherein said processing unit is capable of setting the restriction conditions per process for which the building sequence is decided (whole document; See also European Search Report dated 2/3/06 supplied by applicant).

5. Claims 1 and 3-9 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 6348715 to Matsuda (hereinafter referred to as Matsuda), supplied by applicant.

Referring to claims 1, Matsuda teaches a building sequence planning system for an automobile production line, said system comprising an input unit for inputting information of vehicles to be manufactured, a processing unit for deciding an optimum building sequence based on the vehicle information inputted through said input unit, and an output unit for externally outputting a building sequence schedule decided by said processing unit, wherein said processing unit prepares a vehicle building sequence, determines a degree of dissatisfaction of the prepared building sequence, as a penalty value, in accordance with restriction conditions which are inputted through said input unit and are imposed when building the vehicles into work, and decides a building sequence with a minimum penalty by preparing a plurality of building sequences and determining the penalty value for each building sequence with respect to the restriction conditions. Referring to claims 3, 9, Matsuda teaches a building sequence planning system for an automobile production line according to claim 1, wherein said processing unit propagates the building sequence in an offline process, which corresponds to an assembly completion process, to preceding and succeeding processes with lead-time shifting by employing the number of vehicles residing or accumulated between two processes, thereby deciding the

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building sequence for each of the preceding and succeeding processes. Referring to claim 4, Matsuda teaches a building sequence planning system for an automobile production line according to claim 1, wherein, in a mixed line including branches and joints, said processing unit calculates a different lead time for each vehicle by employing the number of vehicles residing or accumulated between two processes, and propagates the building sequence to preceding and succeeding processes with lead-time shifting, thereby deciding the building sequence for each of the preceding and succeeding processes. Referring to claim 5, Matsuda teaches a building sequence planning system for an automobile production line according to claim 3, wherein, for a vehicle which has to pass a line twice because of work for two-tone color painting, the lead time is modified by adding a time or the number of vehicles. Referring to claim 6, Matsuda teaches a building sequence planning system for an automobile production line according to claim 1, wherein said processing unit is capable of varying a weight used in the penalty determination for each of specifications and options. Referring to claim 7, Matsuda teaches a building sequence planning system for an automobile production line according to claim 1, wherein said processing unit decides the building sequence with the minimum penalty by using an optimization method represented by a mutually coupled neural network or a genetic algorithm. Referring to claim 8, Matsuda teaches a building sequence planning system for an automobile production line according to claim 1, wherein said processing unit is capable of setting the restriction conditions per process for which the building sequence is decided (Paragraphs 6-9; See also English translation of IPER for PCT/JP03/02195, supplied by applicant).

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6. Claims 1, 7, 8 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 6,233,493 to Cherneff et al (hereinafter referred to as Cherneff).

Referring to claim 1, Cherneff teaches a building sequence planning system for an automobile production line, said system comprising an input unit for inputting information of vehicles to be manufactured (Col. 6, lines 59-65), a processing unit for deciding an optimum building sequence based on the vehicle information inputted through said input unit (Col. 2, lines 23-31), and an output unit for externally outputting a building sequence schedule decided by said processing unit (Figs 4-10),

wherein said processing unit prepares a vehicle building sequence, determines a degree of dissatisfaction of the prepared building sequence, as a penalty value (Col. 8, lines 20-51; lines 58-60), in accordance with restriction conditions which are inputted through said input unit and are imposed when building the vehicles into work (Col. 8, lines 52-55), and decides a building sequence with a minimum penalty by preparing a plurality of building sequences (Fig. 3, element 34) and determining the penalty value for each building sequence with respect to the restriction conditions (Col. 8, lines 20-51).

7. A building sequence planning system for an automobile production line according to claim 1, wherein said processing unit decides the building sequence with the minimum penalty by using an optimization method represented by a mutually coupled neural network or a genetic algorithm (Col. 8, lines 21-22).

8. A building sequence planning system for an automobile production line according to claim 1, wherein said processing unit is capable of setting the restriction conditions per process for which the building sequence is decided (Col. 5, lines 11-20; Fig. 5, Col. 7, lines 6-12).

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***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 2, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cherneff as applied to claims 1, 7, 8 above, and further in view of U.S. Pat. No. 6,546,302 to Bergeon (hereinafter referred to as Bergeon).

Referring to claims 2, 11, Cherneff teaches all of the limitations set forth above, however, fails to teach the restriction conditions include leveling in distribution of vehicles having the same specifications, a minimum building interval of vehicles having particular specifications, and a maximum succeeding vehicle number and a minimum succeeding vehicle number in successive building of the vehicles when the number of vehicles successively loaded is taken into consideration.



However, referring to claims 2, 11, Bergeon teaches a processing unit prepares a vehicle building sequence, determines a degree of dissatisfaction of the prepared building sequence, as a penalty value, in accordance with restriction conditions (Col. 2, lines 48-65; Fig. 2, element 44, Col. 5, lines 47 – Col. 6, line 6), said restriction conditions include leveling in distribution of vehicles having the same specifications, a minimum building interval of vehicles having particular specifications, and a maximum succeeding vehicle number and a minimum succeeding vehicle number in successive building of the vehicles when the number of vehicles successively loaded is taken into consideration (Col. 3, lines 19-23; Col. 4, lines 19-23).

Cherneff and Bergeon are analogous art because they are from the same field of endeavor, manufacturing resource scheduling. At time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Cherneff with the restriction conditions of Bergeon. One of ordinary skill in the art would have been motivated to combine these references because Bergeon teaches scheduling and sequencing vehicles for manufacture which allows vehicles to be assembled in an efficient manner. Furthermore, Bergeon teaches a method for scheduling and sequencing vehicles for manufacture which ensures that vehicles having similar characteristics, options and accessories are assembled in relative close proximity to one another in order of sequence for certain characteristics, options and accessories and at a maximum or fixed distance for other characteristics, options and accessories (Col. 1, line 61 – Col. 2, line 4).

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8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cherneff as applied to claims 1, 7, 8, above, and further in view of U.S. Pat. No. 5,177,688 to Rentschler et al (hereinafter referred to as Rentschler).

Referring to claim 6, Cherneff teaches all of the limitations set forth above, however, fails to teach said processing unit is capable of varying a weight used in the penalty determination for each of specifications and options.

However, referring to claim 6, Rentschler teaches a building sequence planning system for an automobile production line, wherein a processing unit prepares a vehicle building sequence (Col. 22, lines 22-48), determines a degree of dissatisfaction of the prepared building sequence, as a penalty value, and wherein the processing unit is capable of varying a weight used in the penalty determination for each of specifications and options (Col. 8, lines 46-62; Col. 12, lines 41-62).

Cherneff and Rentschler are analogous art because they are from the same field of endeavor, manufacturing resource scheduling. At time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Cherneff with the weighting of Rentschler. One of ordinary skill in the art would have been motivated to combine these references because Rentschler teaches an assembly line balancer groups tasks of multi-sided, mixed model assembly lines on the basis of per side and per model constraints, such that resulting compound tasks involve less computational time and power in balancing the line (Abstract). Furthermore, Rentschler teaches a near-optimal assembly line balance for a mixed model, multi-sided product, such that line information is input in a user-friendly format, and output data can be graphically depicted in a variety of user-chosen format (Col. 9, lines 15-19).

***Allowable Subject Matter***

9. Claim 10 is allowed.

The following is a statement of reasons for the indication of allowable subject matter:

None of DAFERNER, Matsuda, Cherneff, Bergeon, or Rentschler, taken either alone or in obvious combination disclose a building sequence planning system for an automobile production line, said system comprising an input unit for inputting information of vehicles to be manufactured, a processing unit for deciding an optimum building sequence based on the vehicle information inputted through said input unit, and an output unit for externally outputting a building sequence schedule decided by said processing unit, having all the claimed features of applicant's instant invention, specifically including:

“wherein said processing unit prepares a vehicle building sequence, determines a degree of dissatisfaction of the prepared building sequence, as a penalty value, in accordance with restriction conditions which are inputted through said input unit and are imposed when building the vehicles into work, the restriction conditions including leveling in distribution of Vehicles having the same specifications, a minimum building interval of vehicles having particular specifications, and a maximum succeeding vehicle number and a minimum succeeding vehicle number in successive building of the vehicles when the number of vehicles successively loaded is taken into consideration, and decides a building sequence with a minimum penalty by preparing a plurality of building sequences and determining the penalty value for each building sequence with respect to the restriction conditions, and wherein said processing unit propagates the building sequence in an offline process, which corresponds to an assembly completion process, to preceding and succeeding processes with lead-time shifting by employing the number

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of vehicles residing or accumulated between two processes, thereby deciding the building sequence for each of the preceding and succeeding processes.”

Also, there is no motivation to combine DAFERNER, Matsuda, Cherneff, Bergeon, or Rentschler to meet these limitations. It is for these reasons that applicant’s invention defines over the prior art of record.

### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Shechtman whose telephone number is (571) 272-3754. The examiner can normally be reached on 9:30am-6:00pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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SPS

Sean P. Shechtman 

June 10, 2007

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